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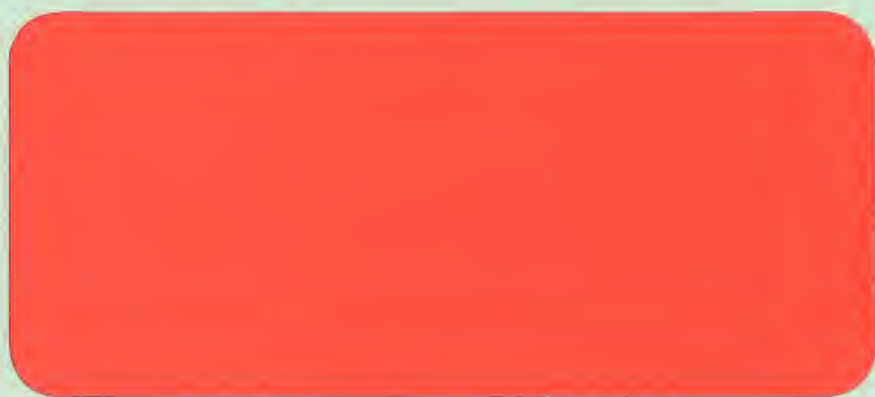
Faculty Working Papers

INTRINSIC AND EXTRINSIC MOTIVATION

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College of Commerce and Business Administration
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(Revised Draft)

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Although the study of motivation is a specialized research area within the field of psychology, it is an important pursuit for nearly everyone. People widely engage in the art of untangling the causes of human behavior and stand ready to predict the future actions of others. Simply stated, the scientific study of motivation is an organized effort to go beyond these native skills or common sense in explaining, predicting and possibly controlling individual behavior.

Typically, explanations of motivational phenomena attempt to answer questions like, "why does a particular worker spend so much time at his job," or, "why did one student write a fifty page term paper when everyone else stopped at ten?" To the layman, these questions are often answered or behavior "explained" by verbally linking a given action with a recognized goal or desirable outcome (Koch, 1956; Lawler, 1973). For example, if person X performs a given act Y, his behavior can be made intelligible to common sense by completing the sentence, "X did Y in order to...." Thus, acceptable common sense explanations of a worker's behavior would be "in order to increase his salary" or "to be promoted to a better job," while a student's high level of performance could be explained by a goal to receive the highest grade or please others.

Unfortunately, common sense theorizing rarely constitutes a scientific explanation of behavior. It does not specify why a particular goal or end state was valued by an individual or why a particular goal or end state was chosen to reach the goal. As

noted by Vroom (1964), the study of motivation by psychologists has been in large part directed toward completing this missing empirical content of common sense reasoning. Basically, the scientific effort has been one of specifying which objects or outcomes have value to the individual (e.g., those which reduce primary, biologically based drives or accomplish ends ultimately related to these basic needs), how attraction to various end states undergoes change (e.g., via deprivation, satiation, stimulus generalization), and how behavior directed toward particular outcomes is acquired, refined and persists over time.

In this paper, we would like to emphasize, as Koch (1956) has done earlier, that there is an important similarity between common sense reasoning and scientific theories of motivation. Inherently, both are based on an assumption of instrumentalism such that individuals are considered to be doing things for specifiable ends. For example, two of the most dominant approaches to the study of motivation, drive theory (Hull, 1943; Spence, 1956) and expectancy x value theory (Lewin, 1938; Tolman, 1932) include the notion of a reward or desired outcome and both posit a learned connection within the organism. For drive theory, this learned connection is an S-R habit strength, while for expectancy x value theory, it is a behavior-outcome expectancy which is perceived by the individual (Campbell, Dunnette, Lawler, and Weick, 1970). In sum, the instrumentalism present in motivational theories is not far removed from the "in order to..." explanation

used by laymen.

The instrumental view of human behavior is most readily apparent in several formulations of the expectancy x value theory of motivation. As shown in Table 1, the formal statements of expectancy x value theory specify that motivation is a product of the valence of a particular goal and the instrumentality of behavior for reaching the goal. For each theoretical formulation,

Insert Table 1 about here

the individual is assumed to take the shortest or most direct path toward a valued goal. However, it is important to recognize that in each case the valued goal is also considered to be external to the process of "doing". That is, in analyzing behavior, an individual will probably be considered to be performing an act for some goal independent of the activity itself (e.g., higher pay, a promotion to a better job, etc.). Unfortunately, these expectancy x value formulations (like many others in motivational psychology) do not easily allow for the fact that a worker may be highly productive simply because he enjoys working hard or is satisfied by good work. Likewise, the theories do not readily lead one to an explanation that a student's work is due to a sheer love of writing or a desire to get something fully explained regardless of the grade or praise to be received from others.

When viewed in the aggregate, the expectancy x value theories outlined in Table 1 can be classified as theories of extrinsic motivation, since, in each, motivation necessitates a specific goal

which provides satisfaction independent of the activity itself.² However, actions may sometimes be valued for their own sake and they may be self-sustained without any external inducement. In these situations, behavior can be said to be intrinsically motivated. Thus, while extrinsic motivation emphasizes the value an individual places on the ends of an action and the probability of reaching these ends, intrinsic motivation refers to the pleasure or value associated with the activity itself. Let us examine more closely the theoretical and empirical basis of intrinsic motivation so that we may explicitly build this factor into a revised theory of motivation.

The Basis of Intrinsic Motivation

Value inherent in behavior. There is strong evidence that many activities such as manipulation, exploration, and information processing provide satisfaction in and of themselves. For example, in some early studies on animal behavior, Harlow and his associates (Harlow, Harlow, and Meyer, 1950; Harlow and McClearn, 1954) demonstrated that monkeys will learn to disassemble puzzles for no reward other than the opportunity to manipulate things. Similarly, Montgomery (1954) showed that rats will systematically select the path in a maze which leads to an opportunity to explore additional mazes. Also, in studies using human subjects, it has been shown that the absence of stimulation and environmental change can lead to extreme discomfort. In one of the most vivid demonstrations of the need for stimulation, Bexton, Heron, and

Scott (1954) employed college students to lie on a cot for 24 hours a day in a sound deadened room (with time out for meals and toilet needs). In this study, visual and tactile stimulation were also minimized since subjects were required to wear translucent goggles and special gloves. Although the participants were paid extremely well for their time (\$20 in 1954 currency), few persons could tolerate the experiment for as long as two or three days.

In general, research has shown that in the absence of either external pleasurable-painful stimulation or basic homeostatic needs, an individual is not quiescent. In fact, there is some evidence that shows that it is precisely when external pressures (e.g., hunger, thirst, sex) are minimized that play, exploration, manipulation, and curiosity behaviors are most likely to be manifested (Hunt, 1965). As a result of these findings, several psychologists have gone as far as to posit new human needs for manipulation (Harlow and McCleary, 1954), exploration (Montgomery, 1954), and curiosity (Berlyne, 1960). Tasks which engage these needs can thus be considered to be intrinsically motivating since the activity provides value to the individual independent of any external sources of satisfaction.

Value inherent in accomplishment. In addition to the value an individual may derive from the physical or mental activities involved in a task, satisfaction may also result from knowing that one's efforts have led to a completed product or accomplish-

ment. McClelland (1951,1961) has conceptualized this source of satisfaction as the fulfillment of a need for achievement. Using a projective test (the TAT) to assess the strength of achievement motivation, it has been shown that situations which involve competition or the testing of one's abilities produce the greatest motive arousal. A learned drive to achieve is thought to be activated when performance can be readily evaluated as a success or failure, and the affect potentially associated with a task (incentive value of success) is hypothesized to be a function of both the strength of this achievement need and the probability of success. The greatest satisfaction or pride in accomplishment would therefore be derived by persons with high needs for achievement who are successful in performing a difficult task (see Litwin, 1966, and Cook, 1970 for empirical tests of this hypothesis).

Also consistent with the notion that many people seek out or value accomplishment are the theoretical statements of White (1959) and Maslow (1954, 1970). White posits that individuals are motivated toward competence or mastery over their environments--that persons not only manipulate and explore their surroundings but strive to master them through higher levels of motor and mental coordination. In a similar vein, Maslow states that many individuals possess active higher order needs for esteem and self-actualization. Esteem needs include a need for personal feelings of achievement or success, while a self-actualization need is considered to be a striving for personal growth and development

by one's own actions. Thus, like McClelland's formulation of achievement motivation, both White's and Maslow's theoretical statements suggest that individuals may be motivated to perform certain tasks without an apparent need for external rewards. If a task involves the opportunity for one to use new skills or is challenging to one's ability, it may therefore provide satisfaction in and of itself.

A Revised Expectancy x Value Theory of Motivation

Although expectancy x value theories were originally conceived as models of extrinsic motivation, they can be amended to include intrinsic factors. As we have seen, it is important to recognize two sources of individual satisfaction that are not generally included in an expectancy x value model. First, a person may work on a task merely for the activity and stimulation involved regardless of whether his actions lead to a specific accomplishment or tangible rewards provided by others. Secondly, individual accomplishments may provide satisfaction to the individual regardless of whether they lead to external rewards such as money, praise, or increased status. Thus, we may think of task performance as involving three distinct sources of value to an individual: 1) value associated with a behavior itself, 2) value associated with accomplishment, and 3) value associated with rewards presented by others. The first two sources of value are mediated by the individual and can be considered intrinsic to his performance,

while the third comprises an extrinsic source of satisfaction.

Several recent formulations of task motivation within organizational settings have incorporated intrinsic as well as extrinsic factors into the expectancy x value framework. Galbraith and Cummings (1967), Porter and Lawler (1967), and Lawler (1971, 1973) have each noted that task accomplishment can be rewarding to an individual independent of any externally mediated rewards. However, their models of motivation have each defined intrinsic rewards as those derived only from achievement, and they have not specifically considered the intrinsic rewards associated with behavior irrespective of any task accomplishment. A recent expectancy model put forth by House and his associates (House, 1971; House, Shapiro, and Wamba, 1974) is most inclusive in that it specifies both of these potential sources of intrinsic motivation. A slightly amended version of the model is presented below:

$$M = IV_a + (P_1) (IV_b) + \left[\sum_{i=1}^n (P_{2i}) (EV_i) \right]$$

$$i = 1, \dots, n$$

where:

M = task motivation

IV_a = intrinsic valence associated with task behavior

IV_b = intrinsic valence associated with task accomplishment

EV_i = extrinsic valences associated with task accomplishment

P_1 = perceived probability that one's behavior will lead to accomplishment of the task

P_{2i} = perceived probabilities that one's task accomplishment will lead to extrinsic valences

House's theory of task motivation posits that the individual estimates the instrumentality of his behavior, P_1 , for accomplishing a task goal and also the likelihood, P_2 , that a task accomplishment will lead to valued extrinsic rewards. In assessing P_1 , the individual may take into consideration such factors as the level of his abilities relevant to the task, barriers to work goal accomplishment in the environment (e.g., not getting sufficient materials to finish a job correctly), and the help or support he will receive from others in the work setting. In assessing P_2 , the individual may consider the likelihood that his supervisor will recognize good performance through praise, favoritism, a monetary raise, or promotion to a better job. In addition, the individual is assumed to place some subjective value upon the behaviors involved in task performance, task accomplishment, and the extrinsic rewards potentially available via work performance. Thus, a worker who is bored at home may possess a high IV_a , a worker who has a high need for achievement will be high on IV_b , while the person in dire need of a bigger paycheck should have a high EV_i . We will make use of this revised version of expectancy x value theory in predicting individual task motivation and formulating specific strategies for changing motivation.³

Methods of Increasing Task Motivation: Extrinsic Factors

Probably the most prevalent action individuals take to change another's task behavior is to alter extrinsic motivation. From the expectancy x value model presented above, we can see that extrinsic motivation can be increased by changing either the extrinsic valences associated with task accomplishment (EV_i), or, the perceived probabilities linking accomplishment to rewards (P_{2i}).

One procedure by which the valence of extrinsic rewards can be altered is through deprivation. Numerous laboratory studies have shown that by depriving a subject of a valued commodity (e.g., food, water, sex), motivation can be increased for any task which leads to its attainment. No doubt, the same principal holds in everyday life. However, the use of deprivation to motivate someone to perform a task is not recommended. Today, deprivation is considered an ethically undesirable way to change behavior, and, fortunately, few allocators of rewards have the amount of control over the lives of others necessary to use it successfully. At present, for example, if an industrial firm chose to restrict the pay of workers, it would, in addition to increasing the perceived value of money, cause workers to transfer quickly to another job. Only when the worker's options are extremely limited (as during periods of high unemployment or a government controlled labor market) would deprivation be an effective motivational tool.

A preferable way to increase extrinsic motivation is to assess the desires or needs of the individuals performing a task, and to make available those extrinsic rewards with the greatest utility. For instance, one purpose of periodic meetings between supervisors and subordinates within small task groups and attitude surveys within large organizations could be to assess regularly the changing needs of employees. Ideally, extrinsic rewards could be tailored to groups of individuals with similar needs (e.g., for security, money, verbal praise) or provided on an individual basis. By simply restructuring the mix of rewards to achieve the greatest extrinsic valences, motivation to perform a task could thus be increased, (see Lawler, 1971 for discussion of "cafeteria style" pay schemes as applied to industry).

In addition to the valences associated with extrinsic rewards, considerable attention should also be given to the perceived probability that task accomplishment will lead to rewards. The most effective procedure in terms of increasing motivation is to make rewards contingent upon performance. As shown in Figure 1, dramatic changes in behavior can result from tying extrinsic rewards to behavior. Depicted in the figure is the level of desired behavior emitted by patients of a mental hospital when rewards are both contingent and non-contingent on behavior. The extrinsic rewards used in the study were tokens which could be exchanged for food, cigarettes, or other valued commodities.

Insert Figure 1 about here

In practice, there are many ways of designing a contingent

reward system. When task accomplishments are easily defined and measurable, it is often feasible to institute some sort of piece-rate incentive system. In these cases, the level of extrinsic rewards is based upon the quantity and/or quality of performance. Often, however, task accomplishments are neither clearly defined nor easily measured. In these cases, a judgment of the individual's performance is required by a supervisor or allocator of rewards. Obviously, any error in evaluation or sudden change in the criteria of performance will sharply reduce the individual's perception that task accomplishment leads to rewards. As a consequence, the perceived objectivity or fairness of the appraisal system can be as important a determinant of the individual's task motivation as the actual contingency between rewards and performance.

Making valued extrinsic rewards contingent upon performance is generally an effective motivational strategy. However, it is not without some problems. First, it requires that a supervisor possess a sufficient quantity of extrinsic rewards to motivate workers to get a task completed. While most formal organizations (e.g., industry, government) can afford to literally purchase a worker's services, a lack of valued extrinsic rewards can present a motivational problem for many informal work settings (e.g., social clubs, volunteer organizations, home environment). Also, as discussed, an effective strategy of extrinsic motivation requires that performance be accurately assessed by supervisors so that rewards can be dispensed on a contingent basis. Although

this is no problem on a routine task in which the supervisor can clearly set the criteria of performance and measure it, frequently (on tasks involving a great deal of skill and creativity) the supervisor may actually know less about the job than the worker and be in a very poor position to evaluate his performance.

Methods of Increasing Task Motivation: Intrinsic Factors

From the revised expectancy x value model we can see that intrinsic motivation results from the perception of rewards which are inherent in either task behavior (IV_a) or accomplishment (IV_b). Several factors can be expected to account for the intrinsic valences associated with both behavior and accomplishment, but not all of them are easily alterable. For example, it would be most difficult to change individual needs for activity, manipulation, or exploration, except on a temporary basis. McClelland and his associates have had some success in increasing individual's achievement needs and motivating entrepreneurial behavior through intensive training sessions (see McClelland and Winter, 1967). However, it is doubtful that achievement motivation can, by itself, affect the performance of persons on routine organizational tasks or other activities which are not highly achievement oriented (McClelland, 1973a; 1973b).

Perhaps the most practical method of increasing a person's intrinsic motivation to perform a task is to purposely alter the characteristics of the work activities he faces. Assuming that individuals possess at least a moderate need for activity and achievement, many tasks can be changed so that individuals derive greater satisfaction from either their task behavior or accomplishment. Many industrial firms have, in effect, followed these principles in programs of job enlargement and job enrichment. For example, the intrinsic rewards associated with task behavior are often improved by increasing the variety of skills necessary to perform a task or by rotating workers among several different tasks. Similarly, the intrinsic rewards associated with task accomplishment can be improved by increasing the responsibility of workers or the importance of the tasks they perform.

Increasing intrinsic motivation has several advantages as a motivational strategy. When individuals can derive satisfaction from task behaviors or accomplishment, there may, for example, be a reduced need for extrinsic rewards to motivate behavior. This may be especially important in cases where supervisors have a limited supply of extrinsic inducements or where individuals do not value those that are readily available. A second advantage of intrinsic motivation is that the need to monitor another's task behavior is reduced. With intrinsic motivation, it may not be necessary to rely totally upon piece-rate incentive systems or periodic performance appraisals to induce a high level of task

performance. Instead, a task can be designed so that the quantity and/or quality of performance fulfills the individual's needs for achievement. When this is done, the worker who values achievement can monitor his own task accomplishment and reward himself on a completely contingent basis.

There are a number of ways a task can be changed to increase intrinsic motivation and some of the most important ones are listed in Figure 2. The job characteristics shown in the figure are based heavily upon the recent research and theory of Hackman and Oldham (in press), but are framed within House's (1971) model of motivation as discussed earlier. It should be noted that the research underlying the model presented here has been conducted largely within industrial organizations. However, the characteristics of tasks are stated in rather general terms and may be applicable to many other settings (e.g., educational organizations). A brief consideration of each of these task characteristics and how they might be altered is listed below.

Insert Figure 2 about here

Task variety. In order to increase the intrinsic valence associated with task behavior (IV_a), greater variety can often be introduced into a job. A greater assortment of tasks can be performed by the individual on a single job or, if this is impossible, he can be rotated periodically from job to job. Many industrial firms have followed this procedure in reducing boredom, and increases in task satisfaction commonly result from such changes. Within educational organizations, a similar increase in the variety of learning tasks can often be used to maintain student interest.

Task uncertainty. Very mechanistic tasks, even if they comprise a varied set of activities, may not be totally satisfying to most individuals. Because of our needs for exploration and cognitive stimulation, a task which involves information processing and/or the resolution of uncertainty may be of

greater intrinsic interest (e.g., Hunt, 1971; Lanzetta, 1970). Obviously, there may be some upper limit to the degree of uncertainty which is satisfying to an individual. Both the individual's level of task-relevant skills needed to resolve uncertainty and his personal tolerance for ambiguity may therefore determine the optimal task design.

Social interaction inherent to the job. Individuals generally derive satisfaction from interacting with others and this source of satisfaction can be an important inducement for working. For most persons, the intrinsic valence associated with task behavior is greater when social interaction is an integral part of the job. The formation of task groups and exchange of information are techniques used by schools for increasing the intrinsic interest of students. Also, within industry, there are now experiments in which previously isolated workers can increase their contact with the ultimate users of their services as well as their co-workers (see Hackman, Oldham, Janson, Purdy, in press).

Task significance. The intrinsic valence associated with task accomplishment (IV_b) can often be improved by increasing the perceived significance of a person's work output. This can be done by either changing the individual to a more important job or by increasing the salience of his present work output. An example of the latter course of action would be to continually emphasize the usefulness of the person's work or to place the person in direct contact with the ultimate users of his product. Within the educational setting, an increase of task significance may translate itself into a stress for "relevance" in learning activities.

Task identity. Another way to improve the intrinsic valence associated with task accomplishment might be to increase the "wholeness" or identity of a person's work output. At present, within industry, many jobs are so specialized that the worker cannot see the relationship between his small task and the final finished product. In order to increase task identity, jobs can often be redesigned. The individual can be allowed to produce a larger module of work or a small team of workers can be formed to complete an entire assembly process.

Responsibility for results. If an individual does not feel responsible for his work output, it is doubtful

whether he will place a high value on task accomplishment. Only when the person can experience success or failure on a task is he likely to value the intrinsic rewards associated with accomplishment. Therefore, to increase intrinsic motivation, the person might be given a larger amount of discretion over his task activities and held more accountable for his results. In industry, the autonomy of workers is often increased by allowing them to schedule their own work activities, decide on work methods, and check the quality of their own output. Quite similar procedures could be devised within a school environment in order to increase the felt responsibility of students for their own learning.

Barriers to task accomplishment. Within any work setting (e.g., industrial, educational, etc.) the perceived probability that task behavior leads to accomplishment (P_2) may depend on the extent to which there are barriers to task accomplishment. Some of these barriers may be internal to the individual such as his ability or training to perform a task, while many others may be related to his immediate task environment (e.g., not getting the necessary material or social support necessary to complete the job). Restructuring a job (or educational task) so as to remove external barriers to accomplishment and providing requisite training and supervision may thus serve to increase an individual's intrinsic motivation.

Knowledge of results. Knowledge of results can also be expected to affect a person's intrinsic motivation to perform a task. Clearly, if the individual receives no feedback as to the quality of his performance, it will be difficult for him to derive satisfaction from accomplishment. Thus, it is important for supervisors to relate to workers exactly how they are doing. This feedback should be on a continuous basis so that the individual can quickly change his behavior and not merely on a periodic review basis. Ideally, a feedback system should be built into the work itself. At present, many industrial tasks do contain their own quality checks which can be performed by the worker, and, within the educational context, computerized instruction provides a good example of learning tasks in which immediate feedback is provided so that changes in behavior can be effected by the individual.

Effects of intrinsic motivation. Figure 2 shows that intrinsic

motivation can influence both an individual's task attitudes and behavior. If the individual values the behaviors associated with a task actively (IV_a), he can be expected to participate in the task, be satisfied with it, and perhaps even to volunteer for additional tasks of a similar nature. If the individual values task accomplishment and perceives a strong link between his behavior and accomplishment [$(IV_b) (P_1)$], he can also be expected to produce high quality work. Empirical support for these hypotheses is derived from research on both task design and work effectiveness within organizational settings (see Hackman and Lawler, 1971; Hackman and Oldham, in press; House, 1971; Oldham, 1974).

Combining Intrinsic and Extrinsic Motivation

It is apparent from our discussion that both intrinsic and extrinsic motivation can be effective methods of energizing behavior. Either of these motivational strategies can be used to get an individual to perform a task, and both intrinsic and extrinsic rewards can bring satisfaction to the individual. The question remains, however, if these two sources of motivation can be combined effectively to yield overall positive effects on the individual's task attitudes and behavior.

In the expectancy x value model presented above, intrinsic and extrinsic factors are added to form an overall measure of motivation. This model, like those of Galbraith and Cummings (1967), Porter and Lawler (1967), and Lawler (1971, 1973) assumes

that the perception of intrinsic rewards and the perception of extrinsic rewards are additive in their effect on anticipated work satisfaction. It assumes that intrinsic motivation $[(IV_a) + (P_1) (IV_b)]$ and extrinsic motivation $[\sum_{i=1}^n (P_{2i}) (EV_i)]$ summate to produce overall task motivation, and that intrinsic and extrinsic motivation are separate, independent factors.

Whether or not intrinsic and extrinsic sources of motivation are independent or do in fact have an effect upon each other is a question of considerable practical as well as theoretical significance. For example, if they are positively interrelated, then we might expect that extrinsic rewards will increase a person's intrinsic interest in a task, whereas, if they are negatively interrelated, the administration of an extrinsic reward could drive out intrinsic motivation. This issue is of importance to any setting (e.g., industrial organizations, schools, or voluntary work situations) in which extrinsic rewards are administered and the allocator of the rewards is interested in the individual's resultant task attitudes and behavior.

The Interrelationship of Intrinsic and Extrinsic Motivation

Historically, the interrelationship of intrinsic and extrinsic motivation has been the subject of considerable controversy. In fact, it can be said that there exist psychologi-

cal theories which will predict either a positive relationship between intrinsic and extrinsic motivation, a negative relationship, or no relationship at all. As a consequence, we will examine each of these theoretical positions in some detail, and, in the light of recent empirical research, attempt to formulate a unified view of the interrelationship between intrinsic and extrinsic factors.

Long ago, Woodworth (1918) suggested that in the process of acquiring a set of skills toward some end, the skills themselves could develop their own motivating force which might endure even after the end is no longer sought. He stated this point in reference to mastering a business as follows:

. . . while a man may enter a certain line of business from a purely external economic motive, he develops an interest in the business for its own sake. . . and the motive force that drives him in the daily task, provided of course this does not degenerate into mere automatic routine, is precisely an interest in the problems confronting him and in the processes by which he is able to deal with those problems. The end furnishes the motive force for the search for means but once the means are found, they are apt to become interesting on their own account (p. 104).

Allport (1937) has argued in a similar vein that certain behaviors develop their own motive power or "functional autonomy". He noted that while many activities such as making money, solving problems, etc., may have originally served some other motive, their persistence in many people despite an absence of external forces necessitates their having developed value on their own.

The notion that an activity or task behavior can become

valued by an individual through its continued association with an external reward can be explained by the process of secondary reinforcement. Secondary reinforcement refers to a process by which an originally neutral stimulus acquires reinforcing properties through its pairing with a primary reinforcer (see Keller, 1969; Ferster and Skinner, 1969; Uhl and Young, 1967). Thus, in these terms, it is possible to assert that an intrinsically motivating activity is simply one in which the reinforcement value of an extrinsic goal has associatively rubbed off on the behavior. Irrespective of temporal considerations (i.e., how long it might take for an activity to acquire reinforcing properties on its own) one can therefore predict, through secondary reinforcement, that there will be a positive relationship between intrinsic and extrinsic motivation. In short, no matter what one's original reaction to a task is, secondary reinforcement predicts that it may improve over time if it leads to valued extrinsic rewards.

Other psychologists, as we have seen, might disagree with the notion that all activities which are currently valued by individuals are merely those which have previously led to positive external outcomes. As noted by Harlow (1950), Montgomery (1954), and Berlyne (1960), an intrinsically motivated activity may stem from an innate human need for stimulation, information, or knowledge and is not necessarily dependent upon external reinforcement. Since certain activities may be valued independently

of homeostatic needs or acquired drives based upon them, we might therefore posit that there is no clear relationship between intrinsic and extrinsic motivation.

A New Approach to the Problem

Recently, there has begun an investigation into the relationship between intrinsic and extrinsic motivation from an entirely different perspective. Instead of asking how intrinsic motivation might be derived from extrinsic reward contingencies or independent human motives, several researchers have concluded that both intrinsic and extrinsic motivation may be more usefully studied as perceptions on the part of individuals. From a perceptual approach, it is not necessary to know how specific behaviors originally acquired reinforcing properties, but only that an individual at a given point in time may perceive a task to be rewarding in and of itself. That is, if individuals think they are intrinsically motivated, this self-perception alone may be enough to influence future behavior and attitudes. This new approach is consistent with our expectancy x value formulation of motivation, since in the model, individuals are assumed to hold perceptions of rewards to be derived from their actions, and behavior is assumed to be based on the direction and magnitude of these perceptual states.

Within the area of interpersonal perception, it has been noted (see Heider, 1958) that an individual may infer the causes of another's actions to be a function of personal and environmental

force:

Action = f(personal force + environmental force)

This is quite close to saying that individuals attempt to determine whether another person is intrinsically motivated to perform an activity (action due to personal force) or extrinsically motivated (action due to environmental force), or both. The extent to which an individual will infer intrinsic motivation on the part of another is predicted to be affected by the clarity and strength of external forces within the situation (Kelley, 1967; Jones and Davis, 1965). When there are strong forces bearing on the individual to perform an activity there is little reason to assume that a behavior is self-determined, while a high level of intrinsic motivation might be inferred if environmental force is minimal. Several studies dealing with interpersonal perception have supported this general conclusion (see Jones, Davis, and Gergen, 1961; Thibaut and Riecken, 1955; Jones and Harris, 1967; Strickland, 1958).

In 1967, Bem extrapolated this interpersonal theory of causal attribution to the study of self-perception or how one views his own behavior within a social context. Bem hypothesized that the extent to which external pressures are sufficiently strong to account for one's behavior will determine the likelihood that a person will attribute his own actions to internal causes. Thus, if a person acts under strong external rewards or punish-

ments, he is likely to assume that his behavior is under external control. However, if extrinsic contingencies are not strong or salient, the individual is likely to assume that his behavior is due to his own interest in the activity or that his behavior is intrinsically motivated. de Charms has made a similar point in his discussion of individuals' perception of personal causation:

As a first approximation, we propose that whenever a person experiences himself to be the locus of causality for his own behavior (to be an Origin), he will consider himself to be intrinsically motivated. Conversely, when a person perceives the locus of causality for his behavior to be external to himself (that he is a Pawn), he will consider himself to be extrinsically motivated (1968, p. 328).

de Charms emphasized that the individual may attempt to psychologically label his actions on the basis of whether or not he has been instrumental in affecting his own behavior; that is, whether his behavior has been intrinsically or extrinsically motivated.

The Case for a Negative Relationship between Intrinsic and Extrinsic Motivation

The self-perception approach to intrinsic and extrinsic motivation leads one to the conclusion that there may be a negative interrelationship between these two motivational factors. The basis for this prediction stems from the assumption that individuals may work backward from their own actions in inferring sources of causation (Bem, 1967; 1972). For example, if external pressures on an individual are so high that they would ordinarily cause him to perform a given task regardless of the internal characteristics of the activity, then the individual might

logically infer that he is extrinsically motivated. In contrast, if external reward contingencies are extremely low or non-salient, one might then infer that his behavior is intrinsically motivated. What is important is the fact that the individual, in performing an activity, may seek out the probable cause for his own actions. Since behavior has no doubt been caused by something, it makes pragmatic, if not scientific, sense for a person to infer personal causation (intrinsic motivation) to the extent that any external source of causation (extrinsic motivation) is absent.

There are two particular situations which provide robust tests of the self-perception prediction. One is a situation in which there is insufficient justification for a person's actions, a situation in which the intrinsic rewards for an activity are very low (e.g., a dull task) and there are no compensating extrinsic rewards (e.g., no monetary payment, verbal praise, etc.). Although rationally, one ordinarily tries to avoid these situations, there are occasions in which a person is faced with the difficult question of "why did I do that?". The self-perception theory predicts that in situations of insufficient justification the individual may cognitively reevaluate the intrinsic characteristics of an activity in order to justify or explain his own behavior. For example, if the individual performed a dull task for no external reward he may "explain" his behavior by thinking that the task was not really so bad after all.

Sometimes, a person may also be fortunate enough to be in a situation in which his behavior is over sufficiently justified. For example, a person may be asked to perform an interesting task and at the same time be lavishly paid for his efforts. In such situations, the self-perception theory predicts that the individual may actually reevaluate the activity in a downward direction. Since the external reward would be sufficient to motivate behavior by itself, the individual may mistakenly infer that he was extrinsically motivated to perform the activity. He may conclude that since he was forced to perform the task by an external reward, the task probably was not terribly satisfying in and of itself.

Figure 3 graphically depicts both the situations of insufficient and overly sufficient justification. From the figure,

Figure 3 about here

we can see that the conceptual framework supporting self-perception theory raises several interesting issues. First, it appears from this analysis that there are only two fully stable attributions of behavior: 1) The perception of extrinsically motivated behavior in which the internal rewards associated with performing an activity are low while external rewards are high; and 2) The perception of intrinsically motivated behavior in which the task is inherently rewarding but external rewards are low. Furthermore, it appears that situations of insufficient justification (where intrinsic and extrinsic rewards are both low) and oversufficient

justification (where intrinsic and extrinsic rewards are both high) involve unstable attribution states. As shown in Figure 4, individuals apparently resolve this attributional instability by altering their perceptions of intrinsic rewards associated with the task.

Insert Figure 4 about here

An interesting question posed by the self-perception analysis is why are individuals predicted to resolve an unstable attribution state by cognitively reevaluating a task in terms of its intrinsic rewards rather than changing their perceptions of extrinsic factors. The answer to this question may lie in the relative clarity of extrinsic as compared to intrinsic rewards, and the individual's relative ability to distort the two aspects of the situation. Within many settings (and especially within laboratory experiments) the conditions of extrinsic rewards are generally quite salient and specific, while persons must judge the intrinsic nature of a task for themselves. Consequently, any shifts in the perception of intrinsic and extrinsic rewards may be more likely to occur in the intrinsic factor. As shown in Figure 4, it is these predicted shifts in perceived intrinsic rewards which may theoretically underlie a negative relationship between intrinsic and extrinsic motivation.

Empirical Evidence: Insufficient Justification

Several studies have shown that when an individual is induced to commit an unpleasant act for little or no external justification

he may subsequently conclude that the act was not so unpleasant after all. Actually, the first theory to account for this phenomenon was the theory of cognitive dissonance (Festinger, 1957). It was predicted by dissonance theorists (Festinger, 1957; Aronson, 1966) that, since performing an unpleasant act for little or no reward would be an inconsistent (and seemingly irrational) thing to do, an individual might subsequently change his attitude toward the act in order to reduce the inconsistency or to appear rational. Bem's self-perception theory yields the same predictions but does not require one to posit that there is a motivating state such as dissonance reduction or self rationalization. To Bem, since the individual examines his own behavior in light of the forces around him, he is simply more likely to come to the conclusion that his actions were intrinsically satisfying if they had been performed under minimal external force.

Generally, there have been two types of experiments designed to assess the consequences of insufficient justification. One type of design has involved the performance of a dull task under varied levels of reward (e.g., Brehm and Cohen, 1959; Weick, 1964; Freedman, 1963; Weick and Penner, 1965). A second, more popular design, has involved some form of counter-attitudinal advocacy, either in terms of lying to a fellow subject about the nature of an experiment or writing an essay against one's position on an important issue (e.g., Festinger and Carlsmith, 1959; Carlsmith, Collins and Helmreich, 1966; Linder, Cooper and Jones, 1967).

Fundamentally, the two types of designs are not vastly different. They uniformly have required subjects to perform an intrinsically dissatisfying act under varied levels of external inducement, and they uniformly have predicted that, in the low payment condition, the subject will change his attitude toward the activity (i.e., think more favorably of the task or begin to believe the position advocated).

The most well-known experiment designed to test the insufficient justification paradigm was conducted by Festinger and Carlsmith (1959). Subjects participated in a repetitive and dull task (putting spools on trays and turning pegs) and were asked to tell other waiting subjects that the experiment was enjoyable, interesting, and exciting. Half of the experimental subjects were paid \$1.00 and half were paid \$20.00 for the counter-attitudinal advocacy (and to be "on call" in the future), while control subjects were neither paid nor performed the counter-attitudinal act. As predicted, the smaller the reward that was used to induce subjects to perform the counter-attitudinal act, the greater was the positive change in their attitudes toward the task. Although the interpretation of the results of this study have been actively debated (e.g., between dissonance versus self-perception theorists) the basic findings have been replicated by a number of different researchers. It should be noted, however, that several mediating variables have also been isolated as being necessary for the attainment of this dissonance

or self-perception effect: free choice (Linder, Cooper and Jones, 1966), commitment or irrevocability of behavior (Brehm and Cohen, 1962), and substantial adverse consequences (Calder, Ross and Insko, 1973; Collins and Hoyt, 1972).

Recently, a strong test of the insufficient justification paradigm was also conducted outside the laboratory (see Staw, 1974). A natural field experiment was made possible by the fact that many young men had joined an organization (Army R.O.T.C.) in order to avoid being drafted, and, these same young men subsequently received information (a draft lottery number) which changed the value of this organizational reward. Of particular relevance was the fact that persons who joined R.O.T.C., did so not because of their intrinsic interest in the activities involved (e.g., drills, classes, and summer camp), but because they anticipated a substantial extrinsic reward (draft avoidance). As a result, persons who received draft numbers which exempted them from military service subsequently faced a situation of low extrinsic as well as intrinsic rewards, a situation of insufficient justification. In contrast, persons who received draft numbers which made them vulnerable to military call-up, found their participation in R.O.T.C. perfectly justified--they were still successfully avoiding the draft by remaining in the Reserve Officer Training Corps. To test the insufficient justification effect, both the attitudes and performance of R.O.T.C. cadets were analyzed by draft number before and after the national draft

lottery. The results showed that persons in the insufficient justification condition enhanced their perception of R.O.T.C. and even performed somewhat better in R.O.T.C. courses after the lottery. It should be recognized, however, that this task enhancement occurred only under very similar circumstances to those previously found necessary for the dissonance or self-perception effect (i.e., high commitment, choice, and adverse consequences).

Empirical Evidence: Overly Sufficient Justification

There have been several empirical studies designed to test the self-perception prediction within the context of overly sufficient justification. Generally, a situation in which an extrinsic reward is added to an intrinsically rewarding task has been experimentally contrived for this purpose. Following self-perception theory, it is predicted that an increase in external justification will cause individuals to lose confidence in their intrinsic interest in the experimental task. Since dissonance theory cannot make this prediction (it is neither irrational nor inconsistent to perform an activity for too many rewards), the literature on overly sufficient justification provides the most important data on the self-perception prediction. For this reason, we will examine the experimental evidence in some detail.

In an experiment specifically designed to test the effect of overly sufficient justification on intrinsic motivation, Deci

(1971) enlisted a number of college students to participate in a problem-solving study. All of the students were asked to work on a series of intrinsically interesting puzzles for three experimental sessions. After the first session, however, one-half of the students (the experimental group) were told that they would also be given an extrinsic reward (money) for correctly solving the second set of puzzles, while the other half of the students (the control group) were not told anything about the reward. In the third session, neither the experimental nor the control subjects were rewarded. This design is schematically outlined below:

Basic Design of Deci (1971) Study

	<u>Time 1</u>	<u>Time 2</u>	<u>Time 3</u>
Experimental Group	No Payment	Payment	No Payment
Control Group	No Payment	No Payment	No Payment

Deci had hypothesized that the payment of money in the second experimental session might decrease subjects' intrinsic motivation to perform the task. That is, the introduction of an external force (money) might cause participants to alter their self-perception about why they are working on the puzzles. Instead of being intrinsically motivated to solve the interesting puzzles, they might find themselves working primarily to get the money provided by the experimenter. Thus, Deci's goal in conducting

the study was to compare the changes in subjects' intrinsic motivation from the first to third sessions for both the experimental and control groups. If the self-perception hypothesis were correct, the intrinsic motivation of the previously paid experimental subjects would be expected to decrease in the third session, while the intrinsic motivation of the unpaid controls should remain unchanged.

As a measure of intrinsic motivation Deci used the amount of free time participants spent on the puzzle task. To obtain this measure, the experimenter left the room during each session supposedly to feed some data into the computer. As the experimenter left the room, he told the subjects that they could do anything they wanted with their free time, and, in addition to the puzzles, current issues of Time, New Yorker, and Playboy were placed near the subject. However, as he left the laboratory, a second experimenter (unknown to the subject) observed the subject's behavior from behind a one-way mirror. It was reasoned that if the subject worked on the puzzles during this free time period when he could do other things, then he must be intrinsically motivated to perform the task. As shown in Table 2, the amount of free time spent on the task decreased for persons who were previously paid to perform the activity, while there was a slight increase for the unpaid controls. Although the difference between the experimental and control groups was only marginally significant, the results are suggestive of the fact that an overly

sufficient extrinsic reward may decrease one's intrinsic motivation to perform a task.

Insert Table 2 about here

Lepper, Greene, and Nisbett (1973) also conducted a study which tests the self-perception prediction in a situation of overly sufficient justification. Their study involved having nursery school children perform an interesting activity, playing with magic markers, with and without the expectation of an additional extrinsic reward. Some children were induced to draw pictures with the markers by promising them a Good Player Award consisting of a big gold star, a bright red ribbon and a place to print their name. Other children either performed the activity without any reward or were told about the reward only after completing the activity. Children who participated in these three experimental conditions (expected reward, no reward, unexpected reward) were then covertly observed during the following week in a free-play period. As in the Deci (1971) study, the amount of time children spent on the activity when they could do other interesting things (e.g., playing with other toys) was taken to be an indicator of intrinsic motivation.

The findings of the Lepper, Greene, and Nisbett study showed that the introduction of an extrinsic reward for performing an already interesting activity caused a significant decrease in intrinsic motivation. Children who played with magic markers with the expectation of receiving the external reward did not

spend as much subsequent free time on the activity as did children who were not given a reward or those who were unexpectedly offered the reward. Moreover, the rated quality of drawings made by children with the markers was significantly poorer in the expected reward group than either the no reward or unexpected reward groups.

The results of the Lepper et. al. study help to increase our confidence in the findings of the earlier Deci (1971) experiment. Not only are the earlier findings replicated with a different task and subject population, but an important methodological problem is minimized. By reexamining Table 2, one can see that the second time period in the Deci experiment was the period in which payment was expected by subjects for solving the puzzles. However, one can also see that in Time 2 there was a whopping increase in the free time subjects spent on the puzzles. Deci explained this increase as an attempt by subjects to practice puzzle-solving so as to increase their chances of earning money. However, what Deci did not discuss is the possibility that the subsequent decrease in Time 3 was not due to the prior administration of rewards, but due to the effect of satiation or fatigue. One contribution of the Lepper et. al. study is that its results are not easily explained by this alternative. In the Lepper et. al. experiment, over a week of time separated the session in which an extrinsic reward was administered and the final observation period.

Although both the Deci and Lepper et. al. studies support the notion that the expectation of an extrinsic reward may decrease one's intrinsic interest in an activity, there is still one important source of ambiguity in both of these studies. You may have noticed in both of these studies that the decrease in intrinsic motivation follows not only the prior administration of an extrinsic reward, but also the withdrawal of this reward. For example, in the Deci study, subjects were not paid in the third experimental session in which the decrease in intrinsic motivation was reported. Likewise, subjects were not rewarded when the final observation of intrinsic motivation was taken by Lepper, Greene, and Nisbett. Thus, it is difficult to determine whether the decrease in intrinsic interest in the task is due to a change in the self-perception of motivation following the application of an extrinsic reward or merely due to frustration following the removal of the reward. An experiment by Kruglanski, Freedman, and Zeevi (1971) helps to resolve this ambiguity.

Kruglanski et. al. (1971) induced a number of teenagers to volunteer for some creativity and memory tasks. To manipulate extrinsic rewards, the experimenters told half of the participants that because they had volunteered for the study, they would be taken on an interesting tour of the psychology laboratory, while the other half of the participants were not offered this extrinsic reward. The results showed that teenagers offered the reward were less satisfied with the experimental tasks and were

less likely to volunteer for future experiments of a similar nature than were teenagers who were not offered the extrinsic reward. In addition, the extrinsically rewarded group did not perform as well on the experimental task (in terms of recall, creativity, and the Zeigarnik effect) as the nonrewarded group. These findings are similar to those of Deci (1971) and Lepper et. al. (1973), but they cannot be as easily explained by a frustration effect. Since in the Kruglanski et. al. study the reward was never withdrawn for the experimental group, the differences between the experimental (reward) and control (no reward) conditions are better explained by a change in self-perception than a frustration effect.

The designs of the three overly sufficient justification studies described above have varying strengths and weaknesses (see Calder and Staw, 1974). However, taken together, their results can be interpreted as supporting the notion that extrinsic rewards added to an already interesting task can decrease intrinsic motivation. This effect, if true, would have important ramifications for educational, industrial, and other work settings. There are many situations in which people are offered extrinsic rewards (e.g., grades, money, special privileges, etc.) for accomplishing a task which may already be intrinsically interesting. The self-perception effect means that, by offering external rewards, we may sometimes be sacrificing an important source of task motivation and not necessarily increasing either

the satisfaction or performance of the participant. Obviously, because the practical implications of the self-perception effect are large, we should proceed with caution. Thus, in addition to scrutinizing the validity of the findings themselves (as we have done above), we should also attempt to determine the exact conditions under which they might be expected to hold.

Earlier, Deci (1971, 1972) had hypothesized that only rewards contingent on a high level of task performance are likely to have an adverse effect upon intrinsic motivation. He had reasoned that a reward which is contingent upon specific behavioral demands is most likely to cause an individual to infer that his behavior is extrinsically rather than intrinsically motivated, and that a decrease in intrinsic motivation may result from this change in self-perception. Although this assumption seems reasonable, there is not a great deal of empirical support for it. Certainly in the Kruglanski et. al. and Lepper et. al. studies all that was necessary to cause a decrease in intrinsic motivation was for rewards to be contingent upon the completion of an activity. In each of these studies, what seemed to be important was the cognition that one is performing an activity in order to get an extrinsic reward rather than a prescribed goal for a particular level of output. Thus, as long as it is salient, a reward contingency based upon the completion of an activity may be able to decrease intrinsic motivation just like a reward contingency based on the quality or quantity of performance.

Ross (1974) recently conducted two experiments which dealt specifically with the effect of the salience of rewards upon changes in intrinsic motivation. In one study, children were asked to play a musical instrument (drums) for either no reward, a non-salient reward, or a salient reward. The results showed that intrinsic motivation, as measured by the amount of time spent on the drums versus other activities in a free play situation, was lowest for the salient reward condition. Similar results were found in a second study in which some children were asked to think either of the reward (marshmallows) while playing a musical instrument, think of an extraneous object (snow), or not think of anything in particular. The data for this second study showed that intrinsic motivation was lowest when children consciously thought about the reward while performing the task.

In addition to the salience of an external reward, there has been empirical research on one other factor mediating the self-perception effect, the existing norms of the task situation. In examining the prior research using situations of overly sufficient justification, Staw, Calder, and Hess (1974) reasoned that there is one common element which stands out. Always, the extrinsic reward appears to be administered in a situation in which persons are not normally paid or otherwise reimbursed for their actions. For example, students are not normally paid for laboratory participation, but the subjects of Deci (1971) and Kruglanski et. al. (1971) were. Likewise, nursery school

children are not normally enticed by special recognition or rewards to play with an interesting new toy, but both Lepper et. al.'s (1973) and Ross' (1974) subjects were. Thus, Staw, Calder, and Hess (1974) manipulated norms for payment as well as the actual payment of money for performing an interesting task. They found an interaction of norms and payment such that the introduction of an extrinsic reward decreased intrinsic interest in a task only when there existed a situational norm for no payment. From these data and the findings of the Ross (1974) study, it thus appears that an extrinsic reward must be both salient and situationally inappropriate for there to be a reduction in intrinsic interest.

Re-assessing the Self-perception Effect

At present, there is growing empirical support for the notion that intrinsic and extrinsic motivation can be negatively interrelated. The effect of extrinsic rewards upon intrinsic motivation has been replicated by several researchers using different classes of subjects (i.e., males, females, children, college students), different activities (i.e., puzzles, toys), and the basic results appear to be internally valid. However, as we have seen, the effect of extrinsic rewards is predicated upon certain necessary conditions (e.g., situational norms and reward salience). This is often the case with many psychological findings which are subjected to close examination.

To date, the primary data supporting the self-perception prediction have come from situations of insufficient and overly sufficient justification. Empirical findings have shown that individuals may cognitively re-evaluate intrinsic rewards in an upward direction when their behavior is insufficiently justified, in a downward direction when there is overly sufficient justification, and, in general, it can be said that the data of these two situations are consistent with the self-perception hypothesis. Still, theoretically, it is not immediately clear why previous research has been so restricted to these two particular contexts. No doubt, it is easier to show an increase in intrinsic motivation when intrinsic interest is initially low (as under insufficient justification) or a decrease when intrinsic interest is initially high (as under overly sufficient justification). Nevertheless, the theory should support a negative interrelationship of intrinsic and extrinsic factors at all levels, since it makes the rather general prediction that the greater are the extrinsic rewards the less likely will the individual infer that he is intrinsically motivated.

Quite recently, there has been one empirical study which has tested the self-perception hypothesis by manipulating both intrinsic and extrinsic motivation. Calder and Staw (in press) experimentally manipulated both the intrinsic characteristics of a task as well as extrinsic rewards in an attempt to examine the interrelationship of these two factors at more than one level. In the study,

male college students were asked to solve one of two sets of puzzles which were identical in all respects except the potential for intrinsic interest. One set of puzzles contained an assortment of pictures which were highly rated by students (chiefly from Life magazine but including several Playboy centerfolds), while another set of puzzles was blank and rated more neutrally. To manipulate extrinsic rewards, half of the subjects were promised \$1.00 for their 20 minutes of labor (and the dollar was placed prominently in view), while for half of the subjects, money was not mentioned nor displayed. After completing the task, subjects were asked to fill out a questionnaire on their reactions to the puzzle-solving activity. The two primary dependent variables included in the questionnaire were a measure of task satisfaction and a measure of subjects' willingness to volunteer for additional puzzle-solving exercises. The latter measure consisted of a sign-up sheet in which subjects could indicate the amount of time they would be willing to spend (without pay or additional course credit) in future experiments of a similar nature.

The results of the Calder and Staw experiment showed a significant interaction between task and payment on subjects' satisfaction with the activity and a marginally significant interaction on subjects' willingness to volunteer for additional work without extrinsic reward. These data provided empirical support for the self-perception effect in a situation of overly sufficient justification, but not under other conditions. Specifically, when the task was initially interesting (i.e. using the picture puzzle activity), the introduction of money caused a reduction of task satisfaction and volunteering. However, when the task was initially more neutral (i.e. using the blank puzzle activity), the introduction of money increased satisfaction and subjects' intentions to volunteer for additional work. Thus, if we consider Calder and Staw's dependent measures as indicators of intrinsic interest, the first finding is in accord with the self-perception hypothesis, while the latter result is similar to

what one might predict from a reinforcement theory. The implications of these data, together with previous findings, are graphically depicted in Figure 5.

Insert Figure 5 about here

As shown in the figure, shifts in the perception of intrinsic rewards have only been found at the extremes of insufficient and overly sufficient justification. Thus, it may be prudent to hold in abeyance the general hypothesis that there is a uniformly negative relationship between the perception of intrinsic and extrinsic rewards. Perhaps we should no longer broadly posit that the greater are external rewards and pressures the weaker will be the perception of intrinsic interest in an activity, and the lower are external pressures the stronger will be intrinsic interest. Certainly, under conditions other than insufficient and overly sufficient justification, reinforcement effects of extrinsic rewards on intrinsic task satisfaction have readily been found (see, e.g., Cherrington, Reitz, and Scott, 1971; Cherrington, 1973; Greene, 1974).

At present, it appears that only in situations of insufficient or oversufficient rewards will there be attributional instability of such magnitude that shifts will occur in the perception of intrinsic rewards. Thus, one might speculate that either no attributional instability is evoked in other situations or it is just not strong enough to overcome a countervailing force. This writer would place his confidence in the latter theoretical position. It seems likely that both self-perception and reinforcement mechanisms hold true, but that their relative influence over an individual's task attitudes and behavior varies according to the situational context. For example, only in situations with insufficient or overly sufficient justification will one's need to resolve attributional instability probably be so strong for external rewards to produce a decrease in intrinsic motivation. In other situations,

one might reasonably expect a more positive relationship between intrinsic and extrinsic factors, as predicted by reinforcement theory. Although this view of the interrelationship between intrinsic and extrinsic motivation is only speculative, it does seem reasonable in light of recent theoretical and empirical work. Figure 6 graphically elaborates this model and shows how the level of intrinsic and extrinsic motivation may depend on the characteristics of the situation. In the figure, secondary reinforcement is depicted to be a general force for producing a positive relationship between intrinsic and extrinsic motivation. However, under situations of insufficient and over-sufficient justification, self-perception (and dissonance) effects are shown to provide a second but still potentially effective determinant of a negative interrelationship between intrinsic and extrinsic motivation. The figure shows the joint operation of these two theoretical mechanisms and illustrates their ultimate effect on individuals' satisfaction, persistence, and performance on a task.

Insert Figure 6 about here

Implications of Intrinsic and Extrinsic Motivation

In this discussion we have noted that the administration of both intrinsic and extrinsic rewards can have important effects on a person's task attitudes and behavior. Individually, extrinsic rewards may direct and control a person's activity on a task and provide an important source of satisfaction. By themselves, intrinsic rewards can also motivate task related behavior and bring gratification to the individual. However, as we have seen, the joint effect of intrinsic and extrinsic rewards may be quite complex. Not only may intrinsic and extrinsic factors not be additive in their overall effect on motivation and satisfaction, but the interaction of intrinsic

and extrinsic factors may under some conditions be positive and under other conditions be negative. As illustrated in Figures 5 and 6, a potent reinforcement effect will often cause intrinsic and extrinsic motivation to be positively interrelated, although, on occasion, a self-perception mechanism may be so powerful as to create a negative relationship between these two factors.

The reinforcement predictions of Figures 5 and 6 are consistent with our common sense. In practice, extrinsic rewards are relied upon heavily to induce desired behaviors, and most allocators of rewards (e.g., administrators, teachers, parents) operate under the theory that extrinsic rewards will affect positively an individual's intrinsic interest in a task. Thus, for brevity, we should concentrate our attention on those situations in which our common sense may be in error - those situations in which there may in fact be a negative relationship between intrinsic and extrinsic motivation.

Motivation in Educational Organizations

One of the situations in which intrinsic and extrinsic motivation may be negatively interrelated is our schools. As Lepper and Greene (in press) have noted, many educational tasks are inherently very interesting to students and would probably be performed without any external force. However, when grades and other extrinsic inducements are added to the activity, we may, via overly sufficient justification, be converting an interesting activity into work. That is, by inducing students

into educational tasks with strong extrinsic rewards or by applying external force, we may be converting learning activities into behaviors which will not be performed in the future without some additional outside pressure or extrinsic force.

Within the educational context, a negative relationship between intrinsic and extrinsic motivation poses a serious dilemma for teachers who allocate external rewards. For example, there is no doubt that grades, gold stars and other extrinsic incentives can alter the direction and vigor of specific "in school" behaviors (e.g., getting students to complete assigned mathematics exercises by a particular date). However, due to their effect on intrinsic motivation, extrinsic rewards may also weaken a student's general interest in learning tasks and decrease voluntary learning behavior that extends beyond the school setting. In essence, then, the extrinsic forces which work so well at motivating and controlling specific task behaviors may actually cause the extinction of these same behaviors within situations devoid of external reinforcers. This is an important consideration for educational organizations since most of an individual's learning activity will no doubt occur outside the formal classroom setting which is highly regulated and reinforced.¹

In order to maintain students' intrinsic motivation in learning activities it is recommended that the use of extrinsic rewards be carefully controlled. As a practical measure, it is

recommended that when a learning task is inherently interesting (and would probably be performed without any external force) that all external pressures upon the individual be minimized. Only when a task is so uninteresting that individuals would not ordinarily perform it should extrinsic rewards be applied. In addition, it is recommended that the student role be both enlarged and enriched so as to increase rather directly the level of intrinsic motivation. The significance of learning tasks, responsibility for results, feedback, and variety in student activities are all areas of possible improvement.

Motivation in Work Organizations

Voluntary work organizations are very much like educational organizations in that their members are often intrinsically motivated to perform certain tasks and extrinsic rewards are generally not necessary to induce the performance of many desired behaviors. However, if for some reason extrinsic rewards were to be offered to voluntary workers for performing their services, we would expect to find, as in the educational setting, a decrease in intrinsic motivation. Like the educational context, we would expect that an external reward will decrease self-motivated (or voluntary) behavior which extends to settings free the external reinforcement, although the specific behaviors which are reinforced might be increased. As a concrete example, let us imagine a political candidate who decides to "motivate" his

volunteer campaign workers by paying them for distributing flyers to prospective voters. In this situation one might expect that the administration of an extrinsic reward will increase the number of flyers distributed. However, the political worker's subsequent interest in performing other campaign activities without pay may subsequently be diminished. Similarly, the volunteer hospital worker who becomes salaried may no longer have the same intrinsic interest in his work. Although the newly professionalized worker may exert a good deal of effort on the job and be relatively satisfied with it, his satisfaction may stem from extrinsic rather than intrinsic sources of reward.

Let us now turn to the implications of intrinsic and extrinsic motivation for non-voluntary work organizations. Deci (1972), in reviewing his research on intrinsic motivation, cautioned strongly against the use of contingent monetary rewards within industrial organizations. He maintained that paying people contingently upon the performance of specific tasks may reduce intrinsic motivation for these activities, and he recommended non-contingent reinforcers in their stead. As we have seen, however, a decrease in intrinsic motivation does not always occur following the administration of extrinsic rewards, and certain necessary conditions must be present before there is a negative relationship between intrinsic and extrinsic motivation. Generally, industrial work settings do not meet these necessary conditions.

First, within industrial organizations, a large number of jobs are not inherently interesting enough to foster high intrinsic motivation. Persons would not ordinarily perform many of the tasks of the industrial world (e.g., assembly line work) without extrinsic inducements, and this initial lack of intrinsic interest will probably preclude the effect of overly sufficient justification. Secondly, even when an industrial job is inherently interesting, there exists a powerful norm for extrinsic payment. Not only do workers specifically join and contribute their labor in exchange for particular inducements, but the instrumental relationship between task behavior and extrinsic rewards is supported by both social and legal standards. Thus, the industrial work situation is quite unlike that of either a voluntary organization or educational system. In the former cases, participants may be initially interested in performing certain tasks without external force, and the addition of overly sufficient rewards may convey information that the task is not intrinsically interesting. Within industrial organizations, on the other hand, extrinsic reinforcement is the norm, and tasks may often be perceived to be even more interesting when they lead to large extrinsic rewards.

The very basic distinction between non-voluntary work situations and other task settings (e.g., schools and voluntary organizations) is that, without extrinsic rewards, non-voluntary organizations would be largely without participants. Therefore,

the important question for industrial work settings is not one of payment versus non-payment, but of the recommended degree of contingency between reward and performance. On the basis of current evidence, it would seem prudent to suggest that, within industrial organizations, rewards continue to be made contingent upon behavior. This could be accomplished through programs of performance evaluation, profit sharing or piece rate incentive schemes. In addition, intrinsic motivation should be increased directly via the planned alteration of specific job characteristics (for example, by increasing task variety, complexity, social interaction, task identity, significance, responsibility for results, and knowledge of results).

A Final Comment

Although the study of the interaction of intrinsic and extrinsic motivation is a relatively young area within psychology, it has been the intent of this paper to outline a theoretical model and provide some practical suggestions based upon the research evidence available to date. As we have seen, the effects of intrinsic and extrinsic motivation are not always simple, and several mediating variables must often be taken into account (e.g., initial interest in a task and situational norms) before specific predictions can be made. Thus, in addition to providing "answers" to theoretical and practical problems, it is hoped that this work may illustrate the complex task of drawing conclusions from a limited body of research data. The only caution that is in order is for the reader to regard the present theoretical propositions

and practical recommendations as working statements which are subject to the influence of future empirical evidence.

Footnotes

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² Although Lewin's construct of "resultant force" emphasized the goal directed nature of motivation, its formulation did actually include the intrinsic valence associated with a behavioral path as well as the extrinsic ends of an action.

³ Clearly, any effort to change the motivation or behavior of another individual implies certain ethical considerations. For example, as a change agent, one must assess the likely consequences of a change intervention, the results of not intervening, and the rights, both legal and ethical, of the "target" individual. In the sections which follow, several motivational strategies are described in terms of increasing another person's intrinsic and/or extrinsic motivation to perform a task. The examples which illustrate these strategies consider the change agent to be someone in control of resources or other sources of social power such as a task supervisor, educational instructor, or group leader. Obviously, there may be alternative initiators of change interventions (e.g. from workers, students, outside consultants), and some of the strategies illustrated here may be (justifiably) rejected by a change agent on the basis of local values and social norms.

⁴It is interesting to note that Kazin and Bootzin (1972) have made a quite similar point in their recent review of research on token economics. They noted that while operant conditioning procedures have been quite effective in altering focal behaviors within a controlled setting seldom have changes been found to generalize to natural, non-reinforcing environments.

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Figure Captions

Figure 1: Total Number of Hours of Onward Performance by a Group of 44 Patients Under Contingent and Non-Contingent Reinforcement Schemes. (Ayllon and Azrin, 1965)

Figure 2: Task Determinants of Intrinsic Motivation.

Figure 3: A Conceptual Framework of Self-perception Theory.

Figure 4: A Schematic Analysis of the Self-perception of Intrinsic and Extrinsic Motivation.

Figure 5: The Relative Potency of Self-perception and Reinforcement Mechanisms.

Figure 6: The Interrelationship of Intrinsic and Extrinsic Motivation as a Function of Situational Characteristics.

Table 1. Summary of Expectancy X Value Theories. (Adapted from Korman, 1974)

<i>Theorist</i>	<i>Major Motivational Constructs</i>			<i>Resultant</i>
Lewin et al. (1944)	Subjective probability of achieving desired outcome	(Valence) X Value of desired outcome		→ Force
Tolman (1955)	Expectation of achieving desired X outcome	Demand level for given outcome	Level of X given outcome	→ Performance vector
Stevens (1955)	Subjective probability of achieving desired outcome	Utility of desired X outcome		→ Behavior choice
Rosster (1954)	Expectancy of achieving desired reinforcement	Value of reinforce- X ment		→ Behavior potential
Atkinson (1966)	Probability of achieving desired X outcome	Motive level for achieving desired outcome	Incentive X level of desired outcome	→ Resultant motivation
Wroom (1964)	Expectancy of achieving desired outcome	(Valence) X Value of desired outcome		→ Force

Table 2. Mean number of Seconds Spent Working on the Puzzles During the Free Time Periods. (From Deci, 1971)

Group	Time 1	Time 2	Time 3	Time 3- Time 1
Experimental (n=12)	248.2	313.9	198.5	-49.7
Control (n=12)	213.9	202.7	241.8	27.9

Figure 1

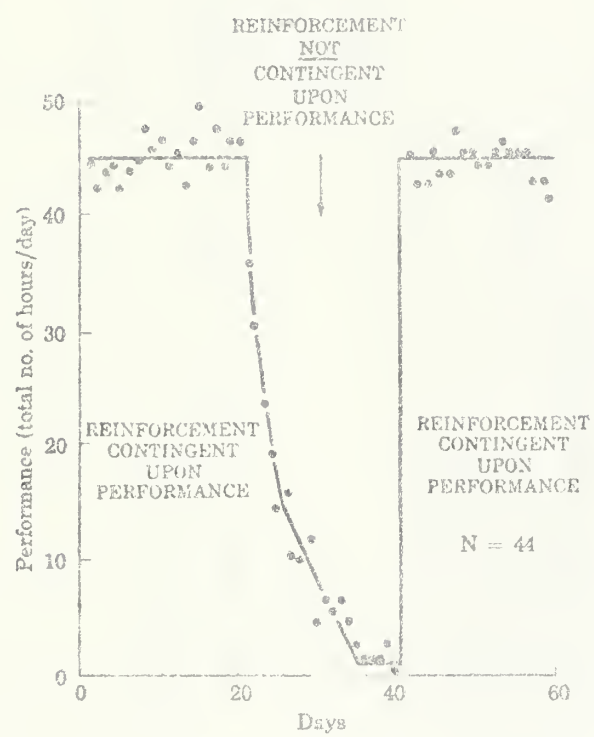


Figure 2

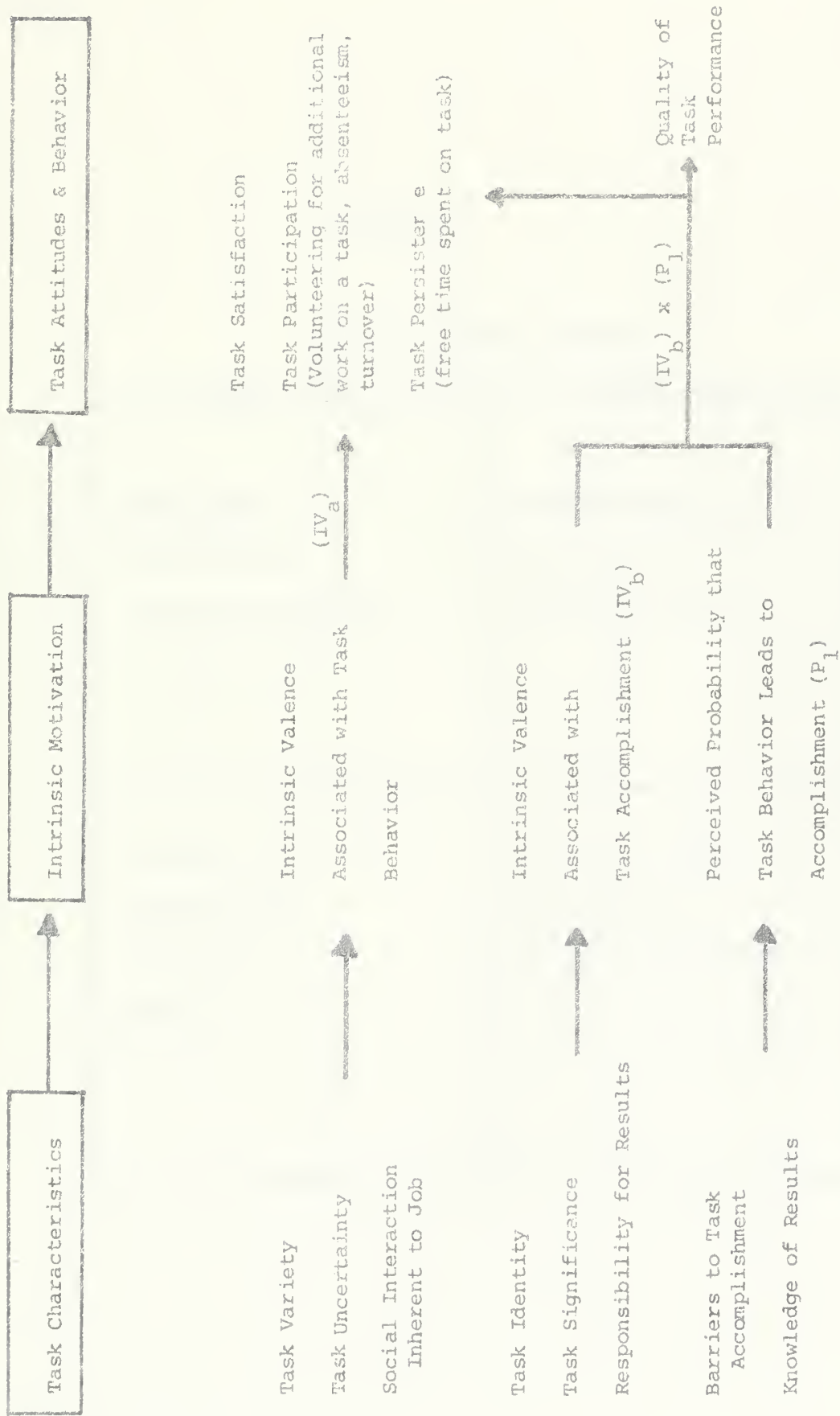


Figure 3

		Level of Extrinsic Rewards	
		Low	High
Level of Intrinsic Rewards	Low	Insufficient Justification (Unstable perception)	Perception of Extrinsically Motivated Behavior
	High	Perception of Intrinsically Motivated Behavior	Overly Sufficient Justification (Unstable perception)

Figure 4

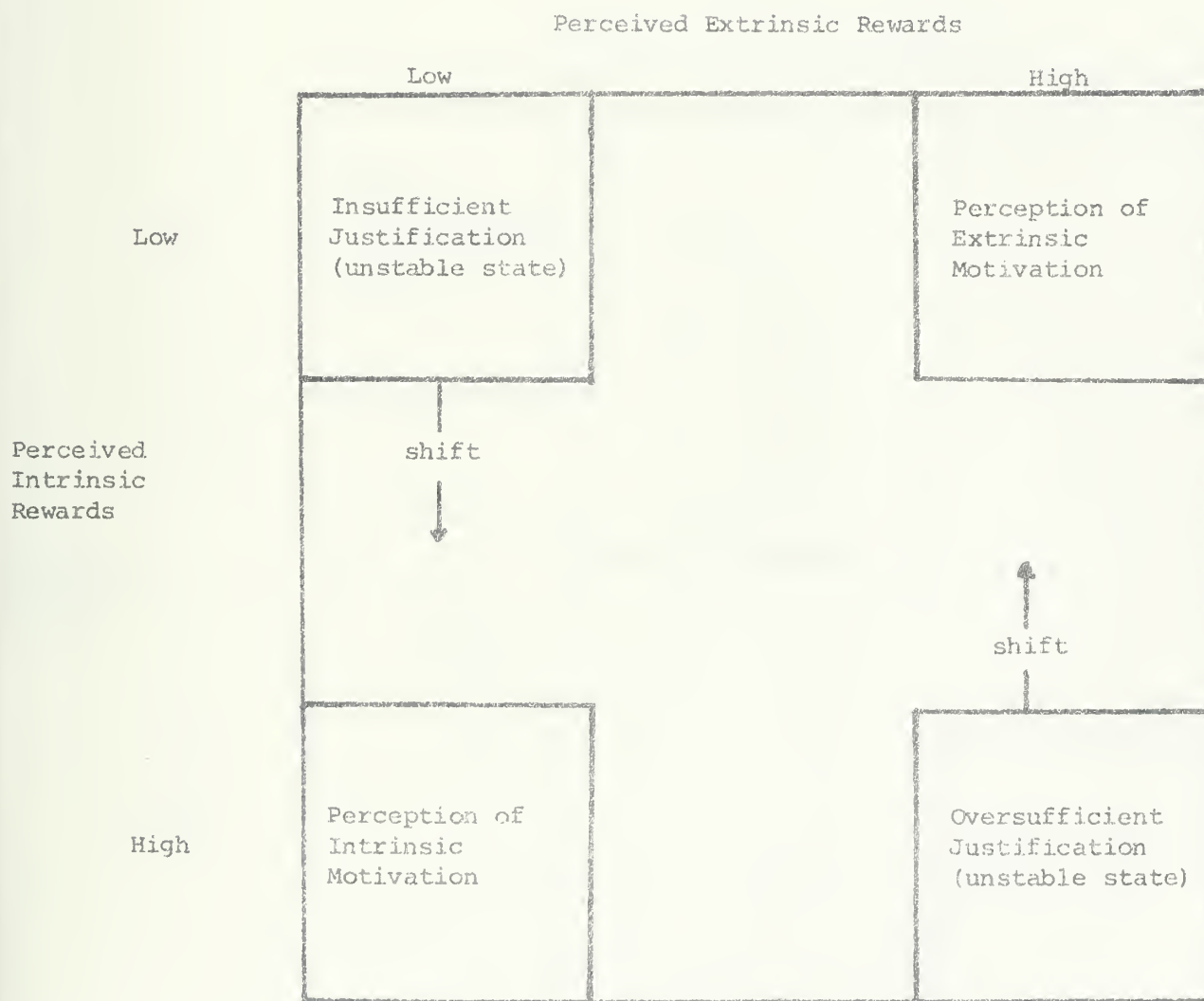


Figure 5

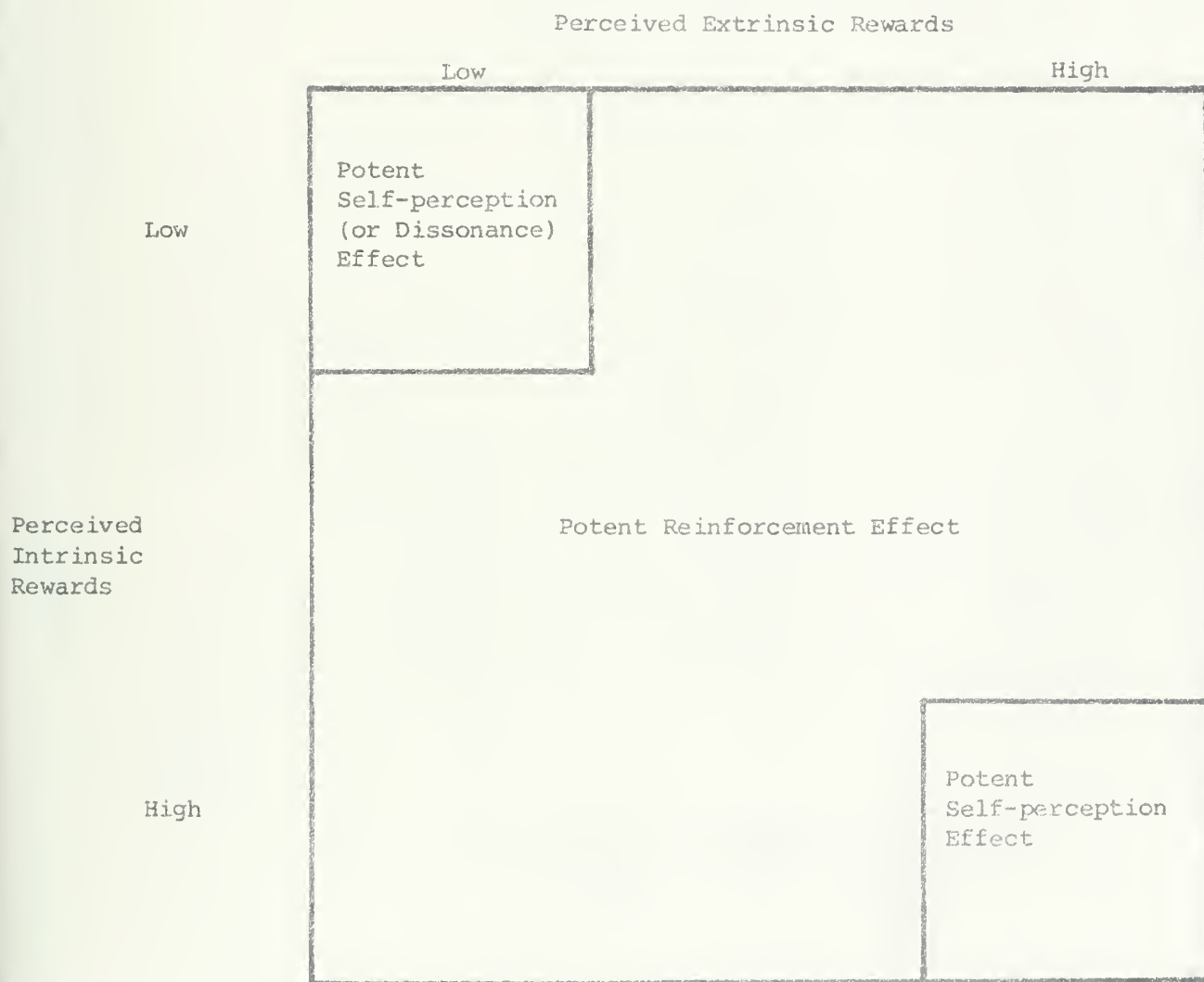
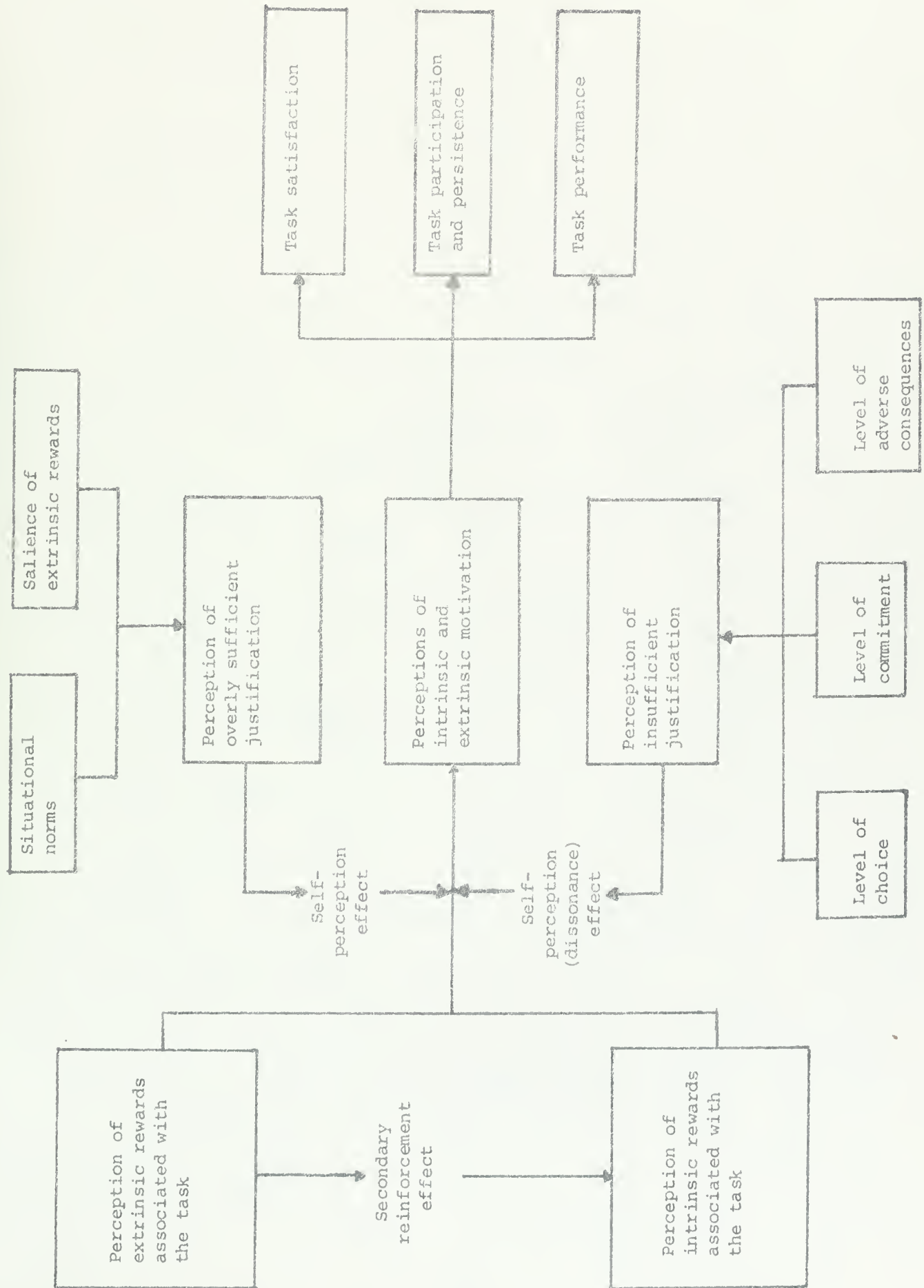


Figure 6





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